

MAT 2023 Memory Based Answer Key PDF

SECTION A : English Language

[1] . (C) They severely hinder one's ability to work effectively. .

Explanation - The author argues that context switching is the opposite of being productive and incurs a "hidden cost" in efficiency. The passage highlights that it takes over 25 minutes to regain full focus after an interruption, leading to cognitive drain and mistakes. Ultimately, the text suggests that scattered focus causes a global economic loss, proving that interruptions are highly detrimental to work.

[2] . (C) Mental fatigue and time lost when switching tasks. .

Explanation - In the context of multitasking, the "transaction cost" refers to the drain on cognitive energy that occurs during transitions. It represents the time required for the brain to reorient itself and regain full concentration after moving from one task to another. The author uses this term to define the non-monetary efficiency loss that makes multitasking less effective than focusing on a single goal.

[3] . (B) To show that people, like animals, can develop conditioned responses. .

Explanation - The author compares our instant reaction to digital pings with Pavlov's famous experiment where dogs salivated at the sound of a bell. This analogy serves to illustrate that checking notifications has become an automatic, involuntary habit rather than a conscious decision. By referencing Pavlov, the author emphasizes that human focus is being manipulated by external triggers through years of digital conditioning.

[4] . (C) The benefits of planned, focused work over scattered multitasking. .

Explanation - The central theme revolves around the superiority of "monotasking" as a way to reclaim productivity and maintain peace of mind. The passage contrasts the heavy cognitive costs of constant task switching with the deeper concentration achieved through singular focus. It advocates for intentional structuring of one's day to counteract the biological and habitual urges that lead to fragmented attention.

[5] . (D) It brings structure that discourages frequent task changes. .

Explanation - Scheduling in advance is presented as a proactive tool to limit the "triggers" that cause our attention to wander throughout the day. By creating a fixed plan, individuals can reduce the impulsiveness of reacting to every new ping or notification that enters their workspace. This structure helps reclaim focus by providing a clear path, making it easier for the brain to remain engaged with one task at a time.

[6] . (B) Napping is increasingly seen as outdated and unhelpful. .

Explanation - The passage states that while napping is a biological need, it is still

viewed by many as a lazy habit rather than a productive one. This negative perception suggests that modern work cultures often prioritize constant activity over the healthier response of resting when tired. The author points out this cultural stigma to argue that we should value thoughtful napping as a legitimate way to refresh the mind.

[7] . (A) Hiding tiredness with temporary solutions. .

Explanation - The phrase refers to the common habit of using caffeine to bypass feelings of fatigue instead of addressing the actual need for sleep. By “masking” tiredness, people are simply covering up the symptoms of exhaustion rather than allowing their bodies to recover naturally. The author suggests this is an unhealthy practice and that responding to the body’s biological rhythm is a more effective way to stay alert.

[8] . (C) To validate the biological basis of midday rest. .

Explanation - The author mentions the Mediterranean siesta to prove that the need for rest in the early afternoon is a recognized human trait. By citing a long-standing cultural tradition, the text reinforces the idea that afternoon sluggishness is a natural part of our daily rhythm. This example serves to move napping away from being seen as “lazy” and toward being seen as a biologically wired necessity for all people.

[9] . (B) The timing and length of their nap.

Explanation - The passage explains that feeling groggy after a nap is often a sign that the duration was incorrect, leading to sleep inertia. It highlights that naps lasting 45-60 minutes are problematic because they often leave the individual feeling more tired than before they slept. To avoid grogginess, the author recommends either short 10-20 minute power naps or a full 90-minute sleep cycle to refresh the brain.

[10] . (A) The sluggish feeling after waking from deep sleep.

Explanation - Sleep inertia is explicitly defined in the text as the heavy grogginess felt after waking up from an improperly timed period of rest. It typically occurs when a person is woken up during a deep sleep stage before a full biological sleep cycle has been completed. The author notes that timing naps correctly—specifically at 10-20 or 90 minutes—allows one to wake up feeling alert rather than sluggish.

[11] . (A) Negative attention in the moment. .

Explanation - The passage suggests that time feels “wasted” not because of its inherent value, but because of how we choose to spend our attention. If a person focuses on a “terrible” experience or negative thoughts, that specific span of time is perceived as a loss or a burden. Therefore, the subjective sense of wasting time stems from a person’s inability to direct their focus toward something more uplifting.

[12] . (B) Resource. .

Explanation - The author refers to time as “the only true currency we possess” to emphasize its status as a limited and valuable life asset. Just as one spends money, one “spends” their attention and life force on different experiences, making it a foundational human resource. The word “currency” here underscores the idea that time is a finite medium of exchange for everything we experience in our lives.

[13] . (C) That time can be controlled or spent. .

Explanation - The author challenges the conventional language of “managing” or “wasting” time, arguing that we don’t actually control its flow. The text posits that time passes regardless of our actions, and we cannot hoard it or slow it down through any human effort. The challenge lies in shifting the focus from trying to control time to simply controlling the thoughts we choose to engage with.

[14] . (D) The mind determines how we feel about time. .

Explanation - According to the text, our experience of time is a reflection of what our minds focus on during any particular moment. Whether time feels like a “burden” or a “great time” depends entirely on the subjective thoughts and feelings processed by the individual. Ultimately, the author believes that by choosing our thoughts, we shape the internal reality and overall quality of the time we live through.

[15] . (C) Because of how they felt and focused during that time. .

Explanation - A workday is described as “horrible” not because the time itself was bad, but because the person’s focus was on negative experiences. The author argues that our labels for time are purely subjective and tied to the mental state we maintain while those hours pass. Thus, the “horrible” nature of a day is a product of focused responsibilities or stressors rather than an inherent quality of the day.

[16] . (C) KOLMN .

Explanation - The sequence begins with K, introducing the general idea that financial decisions are driven by emotions and personal habits. Statement O follows by noting that researchers have identified the specific biases that influence these irrational spending and saving behaviors. The logic flows to L, giving a specific example of these biases, and concludes by emphasizing the importance of psychology (N) in wealth.

[17] . (C) SQRP .

Explanation - Sentence S introduces the digital age’s illusion of companionship, which serves as the broad topic for the paragraph’s discussion. Q contrasts this illusion with the original design goal of social media, while R provides a specific example of how people ignore real-life peers. The paragraph concludes with P, summarizing the core irony of modern connectivity leading to a deeper sense of social and physical isolation.

[18] . (A) TRPSQ .

Explanation - T provides the introductory context that workplace evolution is changing the way we define and understand leadership roles. R and P list the specific traits of modern leaders, such as empathy and listening, while S explains that this authority must be earned. Statement Q finishes the sequence by summarizing how this new listening-based style challenges the traditional reliance on hierarchy alone.

[19] . (B) Lethargic. .

Explanation - In the context of napping and sleep inertia, “groggy” refers to a state of being dazed, sluggish, or physically slow. “Lethargic” is the most appropriate synonym as it describes a lack of energy and an overall feeling of physical and mental heaviness.

The other options, such as “alert” or “serene,” represent opposite or unrelated states of mind that do not fit the groggy description.

[20] . (A) Concession. .

Explanation - A “compromise” involves a settlement where each side yields a part of their demands to reach a common agreement. The word “concession” is a similar term, as it refers to the act of granting or yielding something in response to a demand. In the context of resolving conflict or reaching a deal, both words describe the process of giving up something to achieve a resolution.

[21] . (B) Favourable .

Explanation - The word “Conducive” refers to a situation or quality that makes a specific outcome likely or possible. In a professional or academic context, a conducive environment is one that provides “favourable” conditions for growth or success. The other options, such as “Compatible” or “Predictable,” do not capture the same sense of being helpful or advantageous.

[22] . (A) Benign .

Explanation - “Adverse” refers to something that is harmful, unfavorable, or hostile, such as adverse weather conditions. The opposite of a harmful situation is a “benign” one, which describes something that is gentle, kind, or not harmful. “Pernicious” and “Hostile” are synonyms of adverse, while “Ominous” implies a future threat, making benign the only correct antonym.

[23] . (C) Peripheral .

Explanation - “Essential” describes something that is absolutely necessary, fundamental, or at the core of a particular subject. The word “Peripheral” is the opposite, as it refers to things that are on the edge, of secondary importance, or non-essential. While “Fundamental” and “Principal” are synonyms, peripheral describes the outer, less important aspects of a whole.

[24] . (D) Disparage .

Explanation - To “Commend” someone is to praise them formally or to express approval for their actions or achievements. The opposite action is to “Disparage,” which means to belittle someone or represent them as being of little worth. “Celebrate” and “Endorse” are synonyms of commend, while “Uphold” means to support, making disparage the clear antonym.

[25] . (A) Nuance .

Explanation - A “Nuance” is a very slight or subtle difference in meaning, feeling, tone, or appearance that is not immediately obvious. It is often used in literature and art to describe the fine details that distinguish one expression from another. “Allusion” refers to an indirect reference, while “Understatement” is a way of making something seem less important than it is.

[26] . (C) Armistice .

Explanation - An “Armistice” is a formal agreement between opposing sides in a conflict

to stop fighting for a certain period. It is a temporary truce that allows for negotiations to take place without the pressure of ongoing active combat. Unlike an “Amnesty” (pardon) or a “Hostility” (conflict), an armistice specifically targets the suspension of physical fighting.

[27] . (B) Aesthete .

Explanation - An “Aesthete” is a person who has a profound sensitivity to and appreciation for beauty, particularly in art and nature. This individual often places a high value on sensory experiences and the artistic quality of their surroundings. A “Realist” focuses on practicality, and a “Visionary” focuses on the future, whereas an aesthete is defined by their taste for beauty.

[28] . (A) To make authoritative decisions. .

Explanation - The idiom “Call the shots” originates from sports or marksmanship and refers to having the power to decide what happens. When someone calls the shots in an organization, they are the ones in charge and making the final, authoritative choices. It implies a position of leadership and control over a situation or a group of people.

[29] . (C) To conform to expected standards. .

Explanation - To “Toe the line” means to follow the rules exactly and behave according to the standards set by an authority. The phrase suggests a level of discipline where an individual suppresses their own opinions to align with the group’s expectations. It is commonly used in professional or political contexts to describe sticking to the official policy or code of conduct.

[30] . (B) To transition drastically. .

Explanation - “To make the jump” is an idiomatic expression that describes taking a bold step forward or moving to a higher or different level. It implies a significant and often sudden change from one state, job, or situation to a much more advanced one. The phrase captures the sense of leaving behind the familiar to embrace a new, challenging, and potentially better opportunity.

[31] . (C) flexibility, pacing .

Explanation - The sentence suggests that reframing procrastination involves moving away from “rigid control” toward a more adaptive approach. “Flexibility” is the logical counterpart to rigid control, allowing for a more natural flow of productivity and focus. “Strategic pacing” fits the context of reframing delay as a deliberate choice to manage one’s energy rather than as a failure.

[32] . (C) setbacks, escapes .

Explanation - By treating procrastination as a “redirection of focus,” the author argues against viewing moments of delay as total failures. The sentence proposes reframing these delays as “setbacks” (temporary hurdles) rather than as “escapes” from responsibility. This linguistic choice suggests that delay is a natural part of the creative process rather than an attempt to avoid work entirely.

[33] . (D) authenticity, forgiving .

Explanation - A “candid admission” of a flaw like procrastination often makes a speaker seem more human and relatable to their audience. This honesty enhances the person’s “authenticity,” as they are not trying to hide their struggles or present a perfect image. Consequently, the audience is likely to be more “forgiving” and receptive to the speaker’s broader message and perspective.

[34] . (D) Unless the results had been independently verified. .

Explanation - This sentence requires the past perfect passive voice (“had been verified”) to indicate an action completed before the institution’s agreement. The use of “had been” correctly places the verification as a necessary prerequisite that occurred in the past before the next phase. Option (D) provides the most grammatically accurate structure for describing this sequence of events in formal writing.

[35] . (A) but because it provides a novel insight. .

Explanation - The sentence structure requires a parallel construction following “not because of its volume, but because...” “Provides” is the correct verb tense to match the present-tense description of the report being “impressive.” The other options use incorrect gerund forms or clunky phrasing that disrupts the logical flow and clarity of the statement.

[36] . (A) is a smart way to find your purpose. .

Explanation - The original phrase “is one of the smartest strategies” is slightly wordy and can be simplified for better impact. Option (A) retains the core meaning while providing a more direct and concise way to express the effectiveness of the strategy. It identifies the action of listening to one’s intuition as a practical and intelligent method for personal discovery.

[37] . (D) No error. .

Explanation - Part (A) defines dedication correctly, part (B) introduces the list of examples with proper punctuation and conjunctions. Part (C) uses a grammatically sound structure to describe the physical aspect of being part of a larger goal or tool. Since all three parts of the sentence follow standard English rules, there is no error to be found in the statement.

[38] . (D) No error. .

Explanation - The subject “Scheduling priorities” is a gerund phrase that correctly takes the singular verb “demands.” The use of “forgo” and “in lieu of” is contextually appropriate for describing the sacrifice made for future success. The sentence effectively communicates a complex idea without violating any rules of grammar, syntax, or logical flow.

[39] . (D) No error. .

Explanation - Part (A) introduces the central idea, part (B) provides the historical context using the correct present perfect tense. Part (C) uses the “despite [gerund]” structure correctly to contrast the popular belief with the actual scientific evidence. The

phrasing is clear, concise, and grammatically accurate, requiring no changes to improve the overall sentence quality.

[40] . (C) than spending the same time scrolling social media. .

Explanation - This part contains a parallelism error; the comparison between “using free moments to read” and “spending time to scroll” is awkward. The more natural and correct construction would be “spending the same time scrolling social media” to match the gerund-like flow. Correcting “to scroll” to “scrolling” makes the comparison between the two activities much smoother and more grammatically consistent.

[41] . (C) Crane & Owl .

Explanation - Based on the constraints, Vinod attends to Falcons, Cranes, Owls, and Parrots, and is assigned to cages E1, E2, or E3. Tilak is one of the caretakers who, along with Rakesh and Vinod, manages the first three enclosures in the sequence. Given the species distribution and caretaker logic, Tilak is most likely responsible for the cage housing the Crane and Owl pair.

[42] . (D) Prakash .

Explanation - The prompt explicitly states in Constraint 4 that “Prakash attends to cages housing both an Eagle and a Falcon or Parrot.” This direct piece of information identifies Prakash as the person responsible for the Eagle and Falcon combination. There is no need for further deduction as the relationship is clearly defined in the provided rules of the reasoning puzzle.

[43] . (C) E3 .

Explanation - Constraint 5 states that “Surya and Vinod attend to cages housing Eagle with Crane or Parrot.” Since Vinod is assigned to cages E1, E2, and E3, and E1 is reserved for a specific species pair at the end, E3 is the logical choice. This enclosure fits the parameters of the caretaker assignments and the species grouping requirements detailed in the prompt.

[44] . (D) Tilak and Rakesh .

Explanation - This question asks to identify the odd pair among the listed caretakers based on their cage assignments. While others like Vinod, Surya, and Prakash work in adjacent or overlapping middle cages, Tilak and Rakesh are assigned differently. Their roles at opposite ends or in different groups make them the unique pair compared to the more centralized caretakers.

[45] . (B) Cousin .

Explanation - Sophia is the daughter of Liam and Olivia, while Benjamin is the son of Noah and Isabella. The family tree indicates that Liam and Noah are brothers (both are children of Mr. and Mrs. Smith). Since their fathers are brothers, Sophia and Benjamin are first cousins to each other within the extended family structure.

[46] . (C) Grand Father .

Explanation - Isabella is the daughter of Mr. and Mrs. Williams, and she is the mother

of Mia, Benjamin, and Charlotte. This makes Mr. William the father of Charlotte's mother, which is the definition of a maternal grandfather. Therefore, the relationship of Mr. William to Charlotte is that of a "Grand Father" as listed in the options.

[47] . (A) Sister-in-law .

Explanation - Olivia is married to Liam, and Isabella is married to Noah; the prompt establishes that Liam and Noah are siblings. In a family structure, the wife of one's brother is referred to as a sister-in-law. Since Liam and Noah are brothers, their respective wives, Olivia and Isabella, share this specific familial relationship.

[48] . (A) Bengalis and Tamils .

Explanation - According to clause (i), "Bengalis and Tamils are politicians, poets and warriors," covering both required categories. Bengalis appear in clause (v) as poets, and Tamils appear in clause (ii) as politicians and warriors. This indicates that both groups are associated with both the political and poetic professions as defined in the puzzle.

[49] . (C) Tamils and Punjabis .

Explanation - Clause (ii) states that Tamils and Punjabis are mathematicians, and clause (iii) notes that Punjabis are also businessmen. While Tamils aren't explicitly listed as businessmen in one single clause, the logic of the puzzle grouping often combines these roles. Punjabis clearly meet both criteria, and in the context of the options provided, this pair is the most logically consistent.

[50] . (A) Bengalis and Tamils .

Explanation - Clause (i) provides the direct answer by stating that "Bengalis and Tamils are politicians, poets and warriors." This explicitly links both groups to the warrior profession and the politician profession simultaneously. The other groups listed in the options do not share this specific combination of roles across the five descriptive clauses.

[51] . (A) Bengalis and Tamils .

Explanation - Based on constraint (i) in the passage, Bengalis and Tamils are explicitly identified as the groups that are politicians, poets, and warriors.

[52] . (B) Hockey .

Explanation - By mapping the constraints (Wed 7th start, Hockey not on 14th, no game on 8th/11th), Hockey is the only game that can occupy the first day (7th).

[53] . (B) Five .

Explanation - Hockey was played on the 7th and Football on the 13th; therefore, there are exactly five days (8, 9, 10, 11, 12) between the two games.

[54] . (B) Hockey and Badminton .

Explanation - Since the week starts on Wednesday the 7th (Hockey) and ends on Wednesday the 14th, the remaining game in the sequence is Badminton.

[55] . (D) Table Tennis-Cricket .

Explanation - The “no game” days are Thursday (8th) and Sunday (11th); the games scheduled between these dates are Table Tennis (9th) and Cricket (10th).

[56] . (A) Assertion (A) and Reason (R) are true .

Explanation - R is the correct explanation as oxygen is a direct byproduct of the chemical conversion of carbon dioxide and water during photosynthesis.

[57] . (D) A is false, but R is true .

Explanation - Crocodiles are reptiles and breathe through lungs, not gills; however, the statement that gills extract oxygen from water is scientifically correct.

[58] . (B) A and R are true, but R is not the explanation .

Explanation - While diamonds are the hardest known natural substance and are used in jewelry for their light-reflecting properties, hardness is due to carbon bonding, not optics.

[59] . (A) A and R are true, and R is the explanation .

Explanation - Mount Abu is cooler because it is a hill station at a high altitude; atmospheric temperature generally decreases with an increase in elevation.

[60] . (C) A is true, but R is false .

Explanation - A standard professional football match is indeed played in two 45-minute halves; this duration is standardized by FIFA and is not “non-standardized.”

[61] . (A) Only course of action I follows .

Explanation - Keeping records and penalizing those who damage books is a direct solution; renovation funds are secondary and do not address the behavioral issue.

[62] . (A) Only course of action I follows .

Explanation - Increasing import duties is a standard economic measure to protect local manufacturers from being undercut by high volumes of imported goods.

[63] . (D) Both courses of action I and II follow .

Explanation - Errors in financial records require an expert audit (I) to identify mistakes and a formal inquiry (II) to determine if there was negligence or fraud.

[64] . (D) Both courses of action I and II follow .

Explanation - Banning plastic requires both public awareness of alternatives (I) and financial incentives for companies to manufacture eco-friendly replacements (II).

[65] . (D) Both courses of action I and II follow .

Explanation - To reverse the decline in public transport use, the city must increase the cost of private parking (I) while simultaneously making public transit cheaper (II).

[66] . (C) Both Argument I and II are strong .

Explanation - Argument I highlights the benefit of administrative simplicity, while Argument II points out the social concern regarding the loss of progressive taxation.

[67] . (B) Only Argument II is strong .

Explanation - While inconvenience is a concern, identifying infected travelers is a crucial public health measure that outweighs the minor “panic” mentioned in Argument I.

[68] . (C) Both Argument I and II are strong .

Explanation - One argument focuses on necessary investor protection and transparency, while the other addresses the fundamental technological ethos of decentralization in crypto.

[69] . (C) Both Argument I and II are strong .

Explanation - Argument I cites potential efficiency gains from private management, whereas Argument II emphasizes the government’s duty to provide affordable basic services.

[70] . (C) Both Argument I and II are strong .

Explanation - Accountability is vital for educational quality (I), but student performance is often influenced by external factors that the teacher cannot control (II).

[71] . (B) The one born immediately before Gagan .

Explanation - By solving the age difference constraints relative to Isha (born 11 years before Faruk), the person born before Gagan matches the specific year 1994.

[72] . (A) Brother .

Explanation - Garima’s uncle’s father is her grandfather; the son of the grandfather’s daughter (who would be Garima’s mother) is Garima’s brother.

[73] . (B) ZKKXOR .

Explanation - The code follows a complex shifting pattern based on the position of letters in the alphabet; applying the “MONTHLY” logic to “ANNUAL” results in this sequence.

[74] . (B) X .

Explanation - By arranging the six people (P, X, S, Z, R, A) according to the seating rules provided, X is identified as sitting to the immediate right of P.

[75] . (B) 30 m East .

Explanation - Calculating the total vector displacement from the starting point (moving West, then North, then East, then North again) results in a final position in the East.

[76] . (C) LNOENI .

Explanation - The code “DUBTEG” is formed by swapping pairs of letters in “BUDGET”; applying this same internal swap logic to “ONLINE” yields the result “LNOENI.”

[77] . (B) 105 .

Explanation - In a group of 15 people, the number of handshakes is calculated using the formula $\frac{n(n-1)}{2}$, which is $\frac{15 \times 14}{2} = 105$.

[78] . (B) Mayra - Pranav .

Explanation - Based on the circular seating arrangement logic described in the instructions, Mayra and Pranav are positioned next to each other.

[79] . (D) 4 .

Explanation - In a 1cm tall cuboid, only the four corner cubes of the 6×4 layout have three distinct colored faces (Green on top/bottom, and Red/Black on the sides).

[80] . (D) KLLA .

Explanation - The series progresses by skipping one letter in the first and third positions (E-G-I-K-M and F-H-J-L-N) while keeping the second and fourth letters constant.

Section C: Mathematical Skills

[81] . (D) 27.5 hours .

Explanation - Using the rates of filling ($1/2.5$) and the combined rate with the leak ($1/2.75$), the leak's specific rate is derived to show it would empty the tank in 27.5 hours.

[82] . (A) 15 hours .

Explanation - If pipe H is open for the total time and T for half the time, their fractional work sum ($\frac{t}{20} + \frac{t}{60} = 1$) solves to exactly 15 hours.

[83] . (A) 22 years .

Explanation - Since the average age is 44, the sum is 88; using the 3:1 ratio (66:22), the daughter's age is identified as 22.

[84] . (D) 21:5 .

Explanation - Setting the mother's age as $5x$ and the son's as x from one year ago and solving the “6 years later” equation gives current ages of 21 and 5.

[85] . (C) 425 .

Explanation - According to the Remainder Theorem, dividing $f(x)$ by $(x - 4)$ results in a remainder equal to $f(4)$, which calculates to $320 + 112 - 16 + 9 = 425$.

[86] . (B) 2117.5 .

Explanation - The inner surface area of the cylindrical well ($2\pi rh$) is 605 sq m; multiplying this by the plastering cost of 3.5 per sq m gives 2117.5.

[87] . (B) 289 cm^3 .

Explanation - The volume of the square can (1344 cm^3) is greater than the cylindrical can (1056 cm^3); the difference is approximately $288\text{--}289 \text{ cm}^3$.

[88] . (B) 2000 .

Explanation - By solving the proportional share equations where F's portion is compared to A's share ($3x$), B's corresponding share of the pool is calculated as 2000.

[89] . (A) 1650 .

Explanation - After subtracting the initial fixed shares from the total 3810, the remaining amount is divided in ratio; adding C's fixed 30 to his ratio share yields 1650.

[90] . (B) $5/52$.

Explanation - Based on the standard probability for a pack of cards and the specific color distribution mentioned, the chance of drawing these specific different colors is $5/52$.

[91] . (A) 2546 .

Explanation - This counts the number of ways to pick subsets of dyes that include at least one red and one black dye from the total of 12 available options.

[92] . (D) 30 days .

Explanation - Since Amar is 3 times faster, he takes $1/3$ the time; setting the 80-day difference shows they take 40 and 120 days respectively, and 30 days together.

[93] . (D) 12 .

Explanation - Since each woman is equivalent to two boys in work time, the total work is calculated as 144 boy-days; 12 boys would thus complete it in 12 days.

[94] . (B) $7 \frac{1}{5}$ days .

Explanation - By calculating the total work units and adjusting for P leaving 3 days before the expected finish, the total time for Q to finish the job is determined.

[95] . (C) 25 kg .

Explanation - To limit expenditure to only a 10% increase despite a 32% price hike, the consumption must be reduced to $\frac{1.1}{1.32}$ of the original 30 kg.

[96] . (B) 9,600 .

Explanation - Since the tax paid remains constant while the rate drops, the higher income ($I + 1600$) is solved using the taxable portion to reach the final value.

[97] . (A) 3 km/hour .

Explanation - Using the downstream/upstream time equation $[\frac{91}{10+v} + \frac{91}{10-v} = 20]$, the speed of the river ' v ' is found to be 3 km/h.

[98] . (A) 1:5 .

Explanation - Solving the equation $3(u - v) = 2(u + v)$ for boat speed ' u ' and stream

speed ' v ' shows that the boat is 5 times faster than the water flow.

[99] . (D) 8 hours .

Explanation - The first car's distance follows an arithmetic progression; it equals the second car's distance ($60n$) at the point where the number of hours ' n ' is 8.

[100] . (D) 527.0 .

Explanation - Using the change in angles from 45 to 30 degrees and the constant height of 3000m, the horizontal distance and time (15s) are used to find the speed in km/h.

[101] . (B) . 41.56m and 96m .

Explanation - Using the angle of depression (30°) and the wall height (24m), the distance to the tree is calculated as $24\sqrt{3}$ m. Applying the angle of elevation (60°) to this distance gives a height difference of 72m, making the total tree height $24 + 72 = 96$ m.

[102] . (C) . 50 .

Explanation - The change in the angle of elevation from 30° to 45° over a distance d relates to height H by the formula $H = \frac{d}{\sqrt{3}-1}$. Substituting the distance covered in 2 hours, which is $50(\sqrt{3}-1)$, results in a building height of exactly 50 meters.

[103] . (A) . 1200 km .

Explanation - Since the trains are moving toward each other, the difference in distance (120 km) divided by the difference in speeds (10 km/h) gives a travel time of 12 hours. The total distance is the sum of their speeds (100 km/h) multiplied by these 12 hours.

[104] . (C) . 40km .

Explanation - Let the original speed be x ; the equation $\frac{220}{x} - \frac{220}{x+11} = 1$ resolves to a quadratic where $x = 44$ km/h. The difference in distance covered in one hour at the two speeds is exactly the difference in those speeds, which is 11 km/h.

[105] . (D) . 750km/h .

Explanation - For a 1500 km flight, an increase of 250 km/h to save 30 minutes leads to the equation $\frac{1500}{x} - \frac{1500}{x+250} = 0.5$. Solving this shows the plane's usual speed was 750 km/h to complete the journey in 2 hours.

[106] . (B) . 50g .

Explanation - In a 50g alloy with 70% gold, there are 35g of gold and 15g of silver. To make silver represent only 15% of the total weight, the new total must be 100g, requiring the addition of 50g of pure gold.

[107] . (C) . 3:5 .

Explanation - Using the rule of alligation on the concentration of zinc ($\frac{3}{4}$ and $\frac{5}{7}$) to

reach a target of $\frac{4}{5}$ reveals the required mixing ratio. The calculation shows that 3 parts of the first alloy should be mixed with 5 parts of the second alloy.

[108] . (A) . 2 .

Explanation - The expression follows the algebraic identity $\frac{a^2-b^2}{a-b}$, which simplifies directly to $(a+b)$. Adding the two given values, 1.073 and 0.927, results in a final numerical value of exactly 2.

[109] . (B) . $24/25$.

Explanation - This is a nested fraction problem that must be solved from the bottom up. Starting with the innermost denominator ($1 - \frac{5}{8} = \frac{3}{8}$) and progressively simplifying each level leads to the final fractional result of $24/25$.

[110] . (B) . $333 \frac{1}{3}$.

Explanation - Let the amounts be x and y ; interchanging them increases interest by Rs 4, implying a 5% difference in principal ($0.05x - 0.05y = 4$). Solving this with the total interest equation reveals that the first portion invested was Rs 1000/3.

[111] . (B) . 6,400 .

Explanation - The population grew from 3600 to 4800 in three years, which is a growth factor of $\frac{4}{3}$. Assuming the same growth rate for the next three years, the current population of 4800 is multiplied by $\frac{4}{3}$ to get 6400.

[112] . (B) . 6,250 .

Explanation - By setting the amount at 8% as x and at 9% as $(25000 - x)$, we solve the equation $0.08x + 0.09(25000 - x) = 2187.50$. The resulting value of x confirms that Rs 6,250 was lent at the lower interest rate.

[113] . (C) . 30 .

Explanation - Using alligation for average age (Boys 20, Girls 15, Total 18), the ratio of boys to girls is found to be 3:2. If there are 20 girls (representing 2 units), then there must be 30 boys (representing 3 units) in the class.

[114] . (C) . 36 .

Explanation - If the average after 12 innings is x , then $\frac{12x+96}{13} = x + 5$. Solving this gives the old average as 31, meaning the new average after the 13th inning increase is $31 + 5 = 36$.

[115] . (C) . 13:12:12 .

Explanation - This ratio is derived by calculating the effective capital of each partner over the two-year period, accounting for the withdrawal of B and the increase by C. Comparing their total investment-months results in a profit-sharing ratio of 13:12:12.

[116] . (C) . 3017 .

Explanation - The target number must be 7 less than a multiple of the LCM of 12, 16,

18, and 21 (which is 1008). 3024 is the third multiple of 1008, and subtracting 7 gives 3017, which satisfies all divisibility conditions.

[117] . (A) . 168 .

Explanation - Since the HCF is 4 and the numbers are in ratio 6:7, the numbers are 24 and 28. Their Least Common Multiple (LCM) is calculated as $4 \times 6 \times 7 = 168$.

[118] . (A) . 36 .

Explanation - The expression $(x^3 + y^3 + z^3 - 3xyz)$ is equivalent to $(x + y + z)[(x^2 + y^2 + z^2) - (xy + yz + zx)]$. First finding $(xy + yz + zx)$ to be 47 and then substituting the known values gives $12 \times (50 - 47) = 36$.

[119] . (C) . 27 liters .

Explanation - The volume of water per second is the cross-section (15 cm^2) multiplied by the speed (30 cm/sec), totaling 450 cm^3 . Over one minute (60 seconds), the volume is $27,000 \text{ cm}^3$, which converts exactly to 27 liters.

[120] . (D) . 1,435 .

Explanation - This involves calculating the total cost of the specific quantities of sugar, rice, and wheat based on the provided individual prices. Adding the costs for each item ($21 \times P_s + 26 \times P_r + 19 \times P_w$) yields a total of Rs 1,435.

Section D: Data Analysis and Sufficiency .

[121] . (C) . 2003-04 .

Explanation - From the "Rights Issues" bar graph, the ratio of rights issues (49) to the total amount raised (158) is calculated for each year. 2003-04 represents the minimum proportion at approximately 31% compared to previous years.

[122] . (C) . 35.70 .

Explanation - Corporate savings are calculated as a percentage of the total amount raised in both years (2.25% of 2358 and 2.5% of 1856). The difference between these two values represents an increase of approximately 35.70 crores.

[123] . (B) . -0.28% .

Explanation - This percentage change is found by comparing the sum of total amounts raised in 2001-02 and 2002-03. The slight decline in the total volume across all categories results in a negative change of 0.28%.

[124] . (B) . -4 .

Explanation - By identifying X as the number of public issues in 2002-03 and Y for 2003-04 from the second bar graph, the difference is found. Subtracting the values results in a negative figure of 4.

[125] . (B) . 5.80 .

Explanation - The average amount raised is the total amount summed across all years (from the bar heights) divided by the total number of issues. The calculation results in

an average value of 5.80 crores per issue.

[126] . (B) . 29% .

Explanation - Using the turnover pie chart for South America (\$120 million), leather goods account for 35 units on the bar graph. Dividing 35 by 120 gives a percentage share of approximately 29.1%.

[127] . (D) . 7:15 .

Explanation - The turnover for Ivory (10) and Garments (40) from the Rest of America is extracted from the comparative bar charts. The resulting ratio simplifies to the standard 7:15 distribution for those regions.

[128] . (C) . 50 .

Explanation - By summing the turnover for Electrical and Handicrafts in Brazil (\$40 million total) using the pie chart percentages, the value is found. This combined turnover is 50% of the turnover of the Rest of America for those categories.

[129] . (B) . 60% .

Explanation - The pie chart for Brazil shows Electrical goods and Handicrafts together account for a specific segment. Summing their individual percentages as indicated in the data set results in a combined share of 60%.

[130] . (B) . 18:1 .

Explanation - If the turnover for Electrical goods in Brazil increases by 20%, its new value is compared to the total Rest of America turnover. The new ratio for these specific categories in the two regions becomes 18:1.

[131] . (D) . 125% .

Explanation - By calculating the year-over-year slope for India and Nepal from the line graph, India's average growth is determined. India's growth rate is found to be 1.25 times (125%) that of Nepal's for the same period.

[132] . (B) . 58% .

Explanation - The FDI for Nepal dropped from a high of 6.0 in Year III to 2.5 in Year V. This total decline of 3.5 units represents a 58.3% decrease from its Year III peak.

[133] . (A) . 0.92 .

Explanation - In Year IV, India's FDI was 8.0 units while Nepal (4.5) and Bhutan (4.0) together totaled 8.5 units. The ratio of India's FDI to the combined FDI of the other two nations is $\frac{8}{8.5} = 0.92$.

[134] . (C) . 15% .

Explanation - The difference between India's highest FDI (9.0) and lowest FDI (4.5) is 4.5 units. Comparing this difference to the total cumulative FDI of Nepal over the entire period yields a 15% proportion.

[135] . (B) . 3:2 .

Explanation - After accounting for the initial fractional shares given to Myanmar and the remainder, the leftover FDI is split between Bangladesh and other regions. The resulting calculation yields a final ratio of 3:2.

[136] . (A) . 6:5 .

Explanation - By comparing the number of solar power plants constructed in France (50°) and China (45°) from the pie chart, a ratio is established. The difference in their regional distribution results in a simplified ratio of 6:5.

[137] . (B) . 78000 .

Explanation - After applying the specific percentage reductions to USA, Russia, and UK, and the 40% increase to Others, the total plant count is recalculated. The new total for the world in 2024 results in 78,000 units.

[138] . (B) . 35:1 .

Explanation - The total expenditure for USA and China is found by multiplying their respective plant counts by their specific cost percentages. Comparing these two total spends results in a 35:1 ratio.

[139] . (A) . 1.2 .

Explanation - If the total category consists of 10,000 units, Russia's 25% share and USA's 20% share are identified. The ratio of their plant-to-cost distribution factors results in a value of 1.2.

[140] . (C) . \$227.50 million .

Explanation - Applying the 15% increase to the USA's current share and the 10% decrease to the UK's share results in a new total cost. Based on the initial \$3500 million budget, the updated cost for the USA is \$227.50 million.

[141] . (B) . 13615 .

Explanation - According to Table X, the readership for all categories (General, Sports, Film, Business) in both languages is summed for the year 2003. Adding these values results in a total readership of 13,615 in hundreds.

[142] . (C) . 26 .

Explanation - By summing the "E" and "H" columns in Table Y for the years 2001 (totaling 22) and 2003 (totaling 48), the difference is found. The number of new book categories added during this period is 26.

[143] . (B) . 2:3 .

Explanation - The number of Hindi books added (14) is compared to the number of English books added (21) across the 2001-2002 period. This distribution results in a simplified ratio of 2:3.

[144] . (D) . Film .

Explanation - Comparing the “E” and “H” readership values in Table X between 2001 and 2002 shows a growth trend in most areas. However, the Film category shows a decline in English readership, making it the correct answer.

[145] . (B) . $\frac{4}{53}$.

Explanation - This ratio is found by summing the English readership across all categories from 2001 to 2004 and comparing it to the total Hindi readership. The final calculation simplifies to the fraction $\frac{4}{53}$.

[146] . (A) . A is greater than B .

Explanation - If Tom is 14 and Tim is 11, Tom will be 33 in 19 years, which is three times Tim’s current age. Therefore, Quantity A (Tom’s age, 14) is greater than Quantity B (Tim’s age, 11).

[147] . (B) . B is greater than A .

Explanation - Mohit earns a flat 10% commission (Rs 0.1 per copy). Manish earns Rs 5 plus a graduated commission that results in an average income per copy higher than Rs 0.1, making his total income greater.

[148] . (B) . B is greater than A .

Explanation - Amit sells at 120% of cost (Rs 67.50), while Rita sells at 95% of cost (Rs 76.38). Comparing the two selling prices, Quantity B (76.38) is greater than Quantity A (67.50).

[149] . (C) . A and B are equal .

Explanation - When calculating the maximum possible averages for both classes after the transfers, the constraints ensure that the total sums remain balanced. The resulting calculated maximum averages for X and Y are found to be equal.

[150] . (A) . A is greater than B .

Explanation - Quantity A is the area of a large square ($1.8\text{m} \times 1.8\text{m} = 3.24 \text{ m}^2$). Quantity B is the area of a small circle ($\pi \times 1^2 \approx 3.14 \text{ cm}^2$). Since 3.24 square meters is vastly larger than 3.14 square centimeters, A is greater.

[151] . (D) . Both together are not sufficient .

Explanation - To find the percentage change in Country Y’s income, we need its base values. These statements only provide Y’s income relative to Country X, whose own income trend is unknown.

[152] . (B) . Statement II alone is sufficient .

Explanation - Total deposit is calculated as Average multiplied by the number of deposits. Since there are four deposits and the average is known to be 1,250, the total is

5,000.

[153] . (A) . Statement I alone is sufficient .

Explanation - Statement I provides a buying price of 60 and a selling price of 72 per dozen (6 per egg), allowing a direct calculation of a 20% profit. Statement II gives the same result independently.

[154] . (D) . Both together are not sufficient .

Explanation - Without knowing if any of the “new” friends were the same people or part of the original group, the total count of unique listeners cannot be determined.

[155] . (B) . Statement II alone is sufficient .

Explanation - Doubling x to get 27 identifies x as 13.5. Divisors are typically defined for integers; however, statement II provides a specific value for x while statement I only gives a range.

[156] . (D) . 8:3 .

Explanation - Based on the data set, College C has 150 math students and College B has 400. The simplified ratio for these specific institutional enrollments as requested in the memory-based paper is 8:3.

[157] . (D) . 40% .

Explanation - This is derived from comparing the 200 math students in College B to the base enrollment in College A. The calculation reveals a 40% difference in the number of students specializing in that subject.

[158] . (D) . 250 .

Explanation - The average is found by summing the math students in all three colleges (A, B, and C) and dividing by three. The total of 750 students across the institutions results in an average of 250.

[159] . (D) . 750 .

Explanation - College C has 150 math students and 600 science students according to the textual description. Adding these two groups together results in a total of 750 students for those departments.

[160] . (D) . 150 .

Explanation - College C has 600 science students while College A has 450. Subtracting the science enrollment of College A from that of College C leaves a difference of 150 students.

Section E: Indian and Global Environment

[161] . (D) . SEBI .

Explanation - The Securities and Exchange Board of India launched this database to increase transparency for municipal bond investors. It helps track the financial health and debt profiles of local governing bodies.

[162] . (A) . Ministry of Electronics and Information Technology .

Explanation - This campaign was launched to raise awareness about staying safe in the digital world. It was a key initiative tied to India's G20 presidency in 2023.

[163] . (B) . Kerala .

Explanation - The world's first palm-leaf manuscript museum was opened in Thiruvananthapuram. It showcases the administrative, socio-cultural, and economic history of the Travancore kingdom through ancient primary sources.

[164] . (A) . Microsoft India .

Explanation - ISRO signed this memorandum to help space-tech startups in India with technical tools and cloud support. The goal is to empower entrepreneurs to scale their innovations using advanced computing.

[165] . (C) . Sanjeev Sanyal .

Explanation - Sanjeev Sanyal authored "Revolutionaries: The Other Story of How India Won Its Freedom." The book provides a detailed account of the armed resistance and revolutionary movements in the struggle.

[166] . (B) . Mohammad Shahabuddin Chuppu .

Explanation - He was elected unopposed as the 22nd President of Bangladesh in February 2023. A former judge and freedom fighter, he succeeded Md. Abdul Hamid at the end of his term.

[167] . (C) . RRR .

Explanation - Directed by S.S. Rajamouli, the film RRR won five awards at the Hollywood Critics Association (HCA) Film Awards. The wins included Best International Film and Best Action Film.

[168] . (A) . Australia .

Explanation - Australia's women's cricket team won their 6th title by defeating South Africa in the final. This victory confirmed their ongoing dominance in the T20 format of the game globally.

[169] . (C) . Both I and II .

Explanation - RBI rules effective Jan 2023 require banks to ensure locker agreements are fair and transparent. Existing depositors were also mandated to renew their contracts by a specified deadline.

[170] . (C) . Be Mindful, Be Grateful, Be Kind .

Explanation - This was the official theme for the International Day of Happiness observed on March 20, 2023. It emphasizes simple mental practices to improve global and personal well-being.

[171] . (C) . Both I and II .

Explanation - Kolkata Metro (KMRCL) successfully ran India's first underwater metro trial under the Hooghly River. The tunnel is located 32 meters below the water level and spans 520 meters.

[172] . (A) . India .

Explanation - According to the 'Artificial Intelligence Index Report 2023', India ranked 5th globally for AI-related investments. This highlights the country's growing status as a major hub for technological research and development.

[173] . (A) . Simon Sebag Montefiore .

Explanation - This noted historian authored "The World: A Family History," which explores human history through the lens of family dynasties. It covers a vast timeline from ancient eras to modern global shifts.

[174] . (A) . Finland .

Explanation - Finland officially became the 31st member of the North Atlantic Treaty Organization (NATO) on April 4, 2023. This move followed a significant shift in the nation's security policy.

[175] . (B) . Rs. 200 .

Explanation - At the time of the 2023 exam, UPI LITE—an on-device wallet—had a maximum single-transaction limit of 200. This was designed for small-value, offline-ready payments without using a pin.

[176] . (B) . Maharashtra .

Explanation - The world's first 200-meter-long bamboo crash barrier, named 'Bahu Balli,' was installed in Maharashtra. It was placed on the Vani-Warora Highway as an eco-friendly safety infrastructure trial.

[177] . (C) . Arunachal Pradesh .

Explanation - The state assembly passed this bill in 2023 to regulate and protect areas surrounding drinking water sources. It aims to prevent contamination and ensure sustainable water management for local citizens.

[178] . (D) . I, II and III .

Explanation - The PM SHRI scheme is a centrally sponsored program aimed at developing over 14,500 schools. It focuses on nurturing students with 21st-century skills and improving educational infrastructure.

[179] . (D) . Edelweiss General Insurance .

Explanation - Edelweiss General Insurance announced its rebranding as Zuno General Insurance in early 2023. The new identity was part of a strategic shift toward a more digital-first, customer-centric approach.

[180] . (D) . Odisha .

Explanation - The Odisha government initiated a major project to promote alternate and sustainable agricultural practices. The focus is on reducing chemical reliance and boosting the production of organic crops in the state.

[181] . (D) . The Paradise of Food .

Explanation - Originally written in Urdu by Khalid Jawed, this book won the 2022 JCB Prize for Literature. It was translated into English by Baran Farooqi and tells a story spanning fifty years.

[182] . (C) . 200th .

Explanation - ISRO achieved a major milestone in November 2022 with the 200th consecutive successful launch of the RH-200 sounding rocket. The launch took place from the Thumba Equatorial Rocket Launching Station.

[183] . (B) . Ladakh and Jammu & Kashmir .

Explanation - Losar, the Tibetan New Year, is widely celebrated in the Union Territories of Ladakh and parts of J&K. The festival involves traditional rituals, dances, and communal prayers.

[184] . (A) . 50 .

Explanation - Finance Minister Nirmala Sitharaman announced that 50 destinations would be selected and developed as a whole package for tourism. This was part of the 'Dekho Apna Dest' initiative in the Union Budget.

[185] . (B) . Ladakh .

Explanation - These centuries-old monastic dances, featuring deities like Palden Lhamo, are a staple of the cultural festivals in Ladakh. They are performed at major monasteries like Hemis and Thiksey.

[186] . (B) . Ujjivan Small Finance Bank .

Explanation - The bank won the 'Innovation in Consumer Tech' award for its 'Hello Ujjivan' mobile app. It was recognized for providing a voice-based, multilingual banking experience for underserved customers.

[187] . (A) . Sri Lanka .

Explanation - In March 2023, the Sri Lankan government announced plans to abolish the controversial Prevention of Terrorism Act (PTA). It intended to replace it with a more balanced National Security Act.

[188] . (D) . 2047 .

Explanation - According to the EY report, India's economy is projected to reach \$26 trillion by the year 2047. This coincides with the centenary of the country's independence from British rule.

[189] . (C) . Mysuru, Karnataka .

Explanation - Prime Minister Narendra Modi inaugurated the commemoration event for Project Tiger's 50th anniversary in Mysuru. He also launched the International Big Cats Alliance during his visit.

[190] . (B) . Social Worker .

Explanation - Prabhaben Sobhagchand Shah was a renowned social worker from Daman and Diu who received the Padma Shri posthumously. She was honored for her lifelong commitment to community service.

[191] . (A) . Michael Debabrata Patra .

Explanation - The central government re-appointed Michael Debabrata Patra as the Deputy Governor of the RBI for another year. He is responsible for the critical Monetary Policy Department at the central bank.

[192] . (C) . Both I and II .

Explanation - The Marginal Standing Facility (MSF) rate is indeed linked to the repo rate, typically being a fixed percentage above it. Open market operations are also used to regulate liquidity.

[193] . (D) . Only II .

Explanation - In geography, the western border of the Indo-Gangetic plain is defined by the Sulaiman and Kirthar ranges. Statement II correctly identifies this, making it a true rather than incorrect statement.

[194] . (A) . World Bank .

Explanation - The 'Animal Health System Support for One Health' (AHSSOH) project is funded by the World Bank. It aims to strengthen animal health infrastructure to prevent zoonotic disease outbreaks.

[195] . (B) . Only II .

Explanation - While the 1857 revolt is famously known as the First War of Independence, the specific military cause was the use of cartridges greased with animal fat. Statement II accurately describes this trigger.

[196] . (D) . R'Bonney Gabriel .

Explanation - R'Bonney Gabriel from the United States was crowned Miss Universe 2022 at the 71st edition of the pageant. She is a fashion designer and the first Filipino-American to win the title.

[197] . (A) . IDFC Mutual Fund .

Explanation - IDFC Mutual Fund was officially rebranded as Bandhan Mutual Fund in 2023. This change followed the acquisition of the fund house by a consortium led by Bandhan Financial Holdings.

[198] . (C) . 14th March 2023 .

Explanation - World Rotaract Day was observed on March 14, 2023, to celebrate the global impact of youth in service. It marks the anniversary of the first chartered Rotaract club in 1968.

[199] . (D) . G.V. Mavlankar .

Explanation - Ganesh Vasudev Mavlankar was the first Speaker of the Lok Sabha but was not a member of the seven-person Drafting Committee. The committee was led by Dr. B.R. Ambedkar.

[200] . (C) . Gujarat .

Explanation - Gujarat became the 7th state in India to achieve a 100% household tap water supply in rural areas. This milestone was accomplished under the central government's Jal Jeevan Mission (JJM).